

7 How Do Business Models Shape Online Communities?

You can't understand technology in isolation – it is inseparable from the social systems that create it, and in which it is used. Researchers in human–computer interaction (HCI) study technology embedded in the world, thinking about “socio-technical systems.” Dix et al. write that “Socio-technical models are concerned with technical, social, organizational, and human aspects of design. They recognize the fact that technology is not developed in isolation but part of a wider organizational environment. It is therefore important to consider social and technical issues side by side” (Dix et al. 1998, 224). Financial factors often don't receive enough attention as a component of the socio-technical system. In this chapter, I will argue that markets are a critical component of that broader social environment. *How things are financed changes what they become.*

The original computer network that later became the internet, the ARPANET, was created as a research project funded by the US Department of Defense (Clark 2018). Today, the internet (from the physical layer up to the application layer) is partly funded by governments and partly by companies. A number of smaller online platforms (like Mattermost and Mastodon) are non-profit, but most are run by corporations and supported either by advertising or subscription fees. How online sites are funded profoundly shapes them.

In this chapter, I will focus on three fundamental ways in which financial factors shape content moderation and online interaction. First, if there is a cost for joining a site or participating in a site, this shapes who can afford it, and who chooses to afford it. Second, customer service is expensive. How we manage bad behavior is fundamentally shaped by how much it costs. Third, how sites make money shape their priorities, design decisions, and policies.

Markets as a Regulator

As we saw in the last chapter, Larry Lessig describes four things that regulate behavior: laws, social norms, technology, and markets. To explain the impact of markets on behavior, Lessig uses the example of smoking. Raising cigarette taxes lowers the number of people who smoke. Markets are a classic way to regulate behavior, and it works for online behavior just like face-to-face behaviors.

Today, people are accustomed to most online sites being free. On supposedly “free” sites, users are often paying by allowing their personal information to be mined, and by accepting targeted advertising. When there is a fee to participate, even a token fee can dramatically reshape user behavior. One of the first community networks, Berkeley Community Memory, leveraged this technique with great success. Faced with a deluge of low-quality posts, they began charging a small fee – just 25 cents – for each post. As a result, the quality of content on the site improved (Shuler 1994). In earlier chapters we discussed peer review as a powerful force for ensuring

quality of content. This small fee encouraged self-review, which is also powerful.

Small fees can have big impacts. The irreverent online discussion site the Something Awful Forums (SAF, www.somethingawful.com) prides itself on its high-quality discussion. New users are represented by an icon that says “stupid newbie” unless they pay a small one-time fee (formerly \$5, now \$9.95) for a paid account. This simple filter helps raise the level of conversation (Pater et al. 2014).

One nice side-effect of the small fee to join SAF is that it makes people think twice about bad behavior. On most online sites, if your account is banned you can just create a new one. Some subreddits try to counter that by blocking submissions from accounts that were created too recently, or have low karma (points you get for upvotes on your posts and comments). On SAF, the fee to join is an elegant deterrent. If you get yourself banned, it’s going to cost you \$9.95 to come back!

A larger fee, of course, has a bigger impact. In the face-to-face world, many social clubs use high or extremely high fees to filter potential members. Clubs with high fees become places for elites to socialize. Such clubs play a role in reproducing inequality – when members of elites network, they inevitably help one another, which reinforces privilege. Not surprisingly, such elite clubs are being created online. For example, the site Rich Kids (<https://richkids.life>) charges €1,000 per month for membership, and promises that tabloids will see your photos. The site Whispers is only for owners of new Rolls Royce cars (Mihalascu 2020). I’m sure there are many sites with expensive barriers to entry that are not visible to the public. An elite

country club has a physical footprint that passers-by can see, but digital ones can be invisible to outsiders.

Market forces like subscription fees may be key to managing bad content on the internet in the future. Over the last few years, there has been a growing recognition that much content on the internet is problematic. In his science fiction book *Fall; or, Dodge in Hell* (Stephenson 2019), author Neal Stephenson imagines a world in which individuals hire editors to manage content they see. Poor people use automated programs to filter their content, and thousands of people may use the same filter. Rich people, on the other hand, hire human editors who know their likes and interests and tailor an information feed for them personally. The result is that people who are economically advantaged get access to better information. In Stephenson's dystopian vision, reliable information is a privilege of the rich, and the less advantaged often sink into bizarre conspiracy and cult beliefs encouraged by a steady flow of unreliable information. With the current rise in belief in false conspiracies like QAnon, chemtrails, and a flat earth, Stephenson's prediction is increasingly plausible.

During the Middle Ages through much of the Renaissance, information was indeed the privilege of the rich. Wealthy merchants hired staff at great expense to go to court and report back on what was taking place. The advent of the first newspapers in the seventeenth century began a gradual process of making news available to a broader segment of society (Pettegree 2014). Wikipedia is the high point of this trend, making the world's knowledge more accessible than ever before.

Some of the first newspapers were sensationalist tabloids, created with the primary goal of making money and only a secondary goal of informing or enlightening. Information that is commercially available has long been of mixed quality (Pettegree 2014). The problem of how to encourage the spread of good content and discourage the spread of bad is longstanding. At the time I am writing this, it feels like the problem is becoming more acute.

Market-based regulation mechanisms are likely to play a significant role in holding back the tide of bad content. How to achieve this without making better-quality information the privilege of the economically more advantaged is difficult and important.

The Cost of Customer Service

A second way that financial factors regulate online behavior is the cost of customer service. For many sites, customer service is their second-largest non-fixed cost (after paying for bandwidth). How much content regulation is affordable fundamentally shapes what kinds of sites are possible.

This was particularly evident in the United States after the passage of the Children's Online Privacy Protection Act (COPPA) in 1998 (FTC 2020). Before this legislation, companies were requiring children to give away personal information as a precondition of playing online games. COPPA ruled that you could only ask kids for personal information with parental consent. Getting parental consent costs money – employees need to be hired to provide customer support for the process. After the law

took effect, many sites for kids closed because their business models were no longer viable. New sites slowly opened over the next several years. In the end, sites for kids evolved into two groups: simple sites supported by advertising dollars that collect no personal information from kids, and more complex sites supported by subscription fees. The subscription fees help defray the cost of verifying parental consent. Changes in required customer support and level of content regulation reshaped the landscape of what sites for kids exist in a fundamental way. All of this is also true in sites for adults.

Data on how much companies spend on customer service is typically proprietary, but the story of Yahoo Answers gives some insight. In the late 2000s, developers at the question-and-answer site Yahoo Answers had a problem with growing amounts of offensive content. Hiring customer service representatives to manage content was costing a million dollars a year, and it was taking on average eighteen hours to respond to complaints.

Randy Farmer and colleagues came up with a clever solution: They built a reputation system for site members who report bad content. If a member has a history of correctly reporting bad content, then Yahoo Answers trusts that person and takes down content they report immediately. The person who posted the content can file an appeal to dispute the removal if they wish. Those appeals are handled by a customer service representative. If an appeal is successful, it lowers the reliable reporting reputation of the person who reported it. Yahoo can tell who to trust to make accurate reports.

When the system was launched, Yahoo found that few post removals were repealed – the people posting offensive content knew an appeal wouldn't be successful. As a result of this system, the average time it took to manage complaints went down from eighteen hours to *thirty seconds*, and the cost to Yahoo went from a million dollars a year to less than \$10,000 a year, total. Farmer and Bryce Glass speculate that part of their jaw-dropping results was a sort of “broken window effect” – trolls quickly learned that Yahoo Answers was no longer a fun place to breach norms because the content would be removed so quickly (Farmer and Glass 2010). This solution leverages human intelligence rather than artificial intelligence. It simultaneously creates a new way to volunteer to help the site and empowers users. It's a clever way to reduce the cost of customer service.

In 1994, I organized a panel discussion at the ACM Computer–Human Interaction (CHI) conference on “Approaches to Managing Deviant Behavior in Virtual Communities.” In the panel proposal, I very sincerely wrote that I advocated a psychological approach to managing bad behavior. An administrator having a serious heart-to-heart chat with someone who is annoying others could solve the problem in a deeper sense than just sanctioning them (Bruckman et al. 1994). In one sense, I wasn't wrong – that approach really can help solve underlying problems in a more lasting way. However, with the scale of today's internet, the suggestion is absurd. Volunteer moderators don't have time to devote minutes, much less hours, to each incident, and staff moderators cost money. Software programs are less expensive than human staff.

With unlimited funds, truly outstanding content moderation is possible. If I can hire enough paid staff and train them well, I can handle difficult content with speed and finesse. With a realistic budget, the situation is different. I organized another panel discussion at CHI on the same topic twelve years later in 2006 (and again in 2018). Reviewing what we knew in 2006 that we didn't know in 1994, a key observation was the fundamentally financial nature of the challenge (Bruckman et al. 2006).

What sort of behavior is allowed fundamentally shapes what a site becomes. Behavior management is shaped by the software systems and human workers (paid and volunteer) who manage it. Both software and human labor cost money. Even using volunteer labor, you need to invest money to pay administrators to respond to volunteer concerns, and build tools for volunteers to use. To understand the management of online behavior, you need to appreciate the connections between the social, technical, and financial aspects.

The Evolution of Business Models for Online Communities

The third way that markets regulate online content is through the business models that support platforms. All the syllabi for my "Design of Online Communities" class are online, from 1998 to the present. I enjoy looking at past years and thinking about how my knowledge and the field's knowledge have evolved. One of the things that has changed the most over the years are the business models. The things I taught my class about topics like community and identity

in 1998 still broadly hold true today. But I couldn't have told you much about future business models to support the internet. Those business models drive site design, so they're of central importance.

The evolution of the business model of Cartoon Network is a good example. Turner Broadcasting is near Georgia Tech, and Chris Waldron from Turner and Cartoon Network came to give guest lectures in my online communities class for many years. In the late 1990s when he first visited, online ads generated negligible revenue for Cartoon Network. Their revenue came from television ads and merchandising. Ads on the website were initially free if you purchased a television ad. The idea of targeted advertising wasn't yet generally understood. Today, online ads are a significant source of revenue for Cartoon Network and much of the technology sector of the economy.

A fundamental assumption behind our market-based economy is that consumers will make rational decisions in selecting products and services. Companies that provide quality products at a fair price will thrive, and others will fail. In this model, everyone simply needs to look out for themselves, and the magic power of the market will ensure that good things will happen. Except that our actual markets are fairly far from idealized markets, and things don't really turn out that way. The current state of the internet is an example.

Business Models as Regulation

Commercial internet sites are driven primarily by the profit motive. Since the 1970s, it's been fashionable in financial

circles to argue that publicly traded companies have an obligation to their stockholders to “maximize shareholder value” (Zuboff 2019). This is neoliberalism, “an ideology of unswerving loyalty to the logic of the market” (Field 2019, 5). Stock in those corporations is likely in your retirement fund, so the idea that they might try to thrive financially has merit. However, if that is their *only* guiding light, it leads to problems.

Underlying this ideology is the assumption that making financial gain the top priority is a kind of objective function that removes bias from the system. In other words, what makes the most money is the right choice for the economy and society. There is no evidence that this is true.

Consider the case of the YouTube recommendation algorithm. To make the most money, YouTube designed their algorithm to try to maximize each person’s time on the site – so they would see the most advertisements. They discovered that leading people to more and more niche content and more controversial content keeps them on the site longer. This increases revenue from advertisements. That sounds like a reasonable design choice until you learn that much of that more-specific content advocates conspiracy theories and ideas not supported by mainstream science. Zeynep Tufekci notes that a simple search for mainstream political figures led her to conspiracy videos claiming that the attacks on the United States in September 2001 were perpetrated by the government. The algorithm quickly takes people to low-quality content, such as videos promoting false conspiracy theories and hate groups. You can maximize shareholder value better if you encourage people to watch

extremist content – it can be quite engrossing. Tufekci concludes that “YouTube leads viewers down a rabbit hole of extremism, while Google racks up the ad sales” (Tufekci 2018). By maximizing profits, YouTube became an engine for convincing people of crazy nonsense.

The driving goal of YouTube and similar platforms is to show people more ads. The more you know about individuals, the more you can both keep them on your site and also better target ads to them. Shoshana Zuboff calls the business model of gathering trace data of people’s online behavior for the purpose of targeted marketing “surveillance capitalism.” In her book *The Age of Surveillance Capitalism*, she points out that many sites deliberately manipulate people to reveal more and more about themselves, for the purpose of marketing to them. As a result, she argues that companies like YouTube are treating people as means to an end – not as ends in themselves. This is *the definition of unethical* (the second formulation of the categorical imperative) as articulated by philosopher Immanuel Kant (Kant and Patton 1964). In the YouTube example, they are trying to maximize ad views without any thought to the impact of false content on individuals or society (Zuboff 2019).

In surveillance capitalism, companies gain more and more knowledge about individuals. Zuboff comments that “unequal knowledge about us produces unequal power over us, and so epistemic inequality widens to include the distance between what we can do and what can be done to us” (Zuboff 2020).

Some targeted advertising may be useful, but letting the desire to do better targeted advertising *drive the*

design of the entire system is leading to bad outcomes for us as consumers and citizens. One possible solution to this dilemma is for companies to *better articulate and prioritize corporate values*. YouTube's mission statement says their goal is "to give everyone a voice and show them the world." It would be better if they aimed to show people the world *as it really is* – to spread knowledge. As we saw in Chapter 3, "knowledge" is justified, true belief. YouTube has begun to make constructive changes to the platform by no longer recommending content about conspiracies (Rosenblatt 2019) and banning misinformation related to public health (BBC 2020).

If platforms better articulate their values, then users can ideally choose among alternatives and select sites that appeal to them. If YouTube decides that they are going to prioritize "good" content, then they are in the uncomfortable position of having to decide what good content is. If there is only one platform, then it makes sense for it to allow all sorts of content. But you can imagine a world in which there is a marketplace of venues with different content policies, and then each person can choose a site that suits them. This already exists to some extent, but there aren't yet enough alternatives. When a few big sites dominate, there is no marketplace.

Another critical problem is that the values of existing platforms are often not clearly expressed to members. Some politically radical sites have been founded with clearly stated, explicit values. This has the benefit that users know what to expect. If you go on the alt-right site Gab and post in favor of liberal ideas (like advocating free

college tuition or government-funded health insurance), you would expect to be downvoted or maybe even banned. Some of my students have tried it, and that's what happened! Where things get fraught is when users don't have clear expectations for what is allowed on a site, and then are surprised by a content removal. ("What do you mean I can't say that here?!")

Even if a platform tries not to have specific values, they end up being forced to make hard decisions. For example, in 2016 Facebook removed a photo of a naked nine-year-old girl and banned the person who posted it. Without more detail, that seems not only reasonable but mandatory. However, the specific photo was the 1972 Pulitzer-Prize-winning photo of a girl in Vietnam burned by napalm. The photo is historically significant and catalyzed a shift in American opinion about the war. Protests arose in response to the removal and the photo was restored (Shahani 2016). If it's hard to decide whether to allow a photo that is already widely recognized as historically important, imagine how hard the decision will be when the next shocking but important photo emerges. As Tarleton Gillespie eloquently documents in his book *Custodians of the Internet*, there is no way today for platforms to avoid hard decisions (Gillespie 2018). These decisions might be easier if corporations articulated a vision for their impact on the world more nuanced than maximizing shareholder value.

In 2020, Facebook launched an "Oversight Board" to help it make such hard decisions in the future, and is aiming for that board to function independently (FTC 2020).

This approach is promising and it will be interesting to see if it functions as hoped, and if other companies follow suit.

An advertising business model pressures platforms to maximize time on the platform and hence ad views. On the other hand, a flat fee, subscription-based business model means it benefits the platform financially if people participate just enough to love it and feel they get value, but no more (since usage incurs bandwidth and support costs). It's intriguing to consider what other business models are viable, and how those would shape incentives for platforms and users.

As we have seen, the business model of a site shapes its content policies. It also shapes where the site invests its precious, scarce development time for software engineers. What a site becomes depends on what its leaders value, and the bottom line can dominate executives' thinking. A bit more attention to what kind of world a site is creating would help. My optimistic hope is that sites that pay more attention to values will actually make more money in the long run. People switch to the email provider ProtonMail because it preserves privacy and security. We need lots more ProtonMails – alternative sites guided by values.

What New Business Models Are Possible?

We have not yet invented all the forms of online community. Some of them we may stumble into. In fact, the collaboration platform Slack began as an internal development tool for a team who were building a game – and then the engineers realized that their collaboration tool was a better

product than the game itself (Baer 2016). Other innovations are likely to be carefully planned. Understanding the nature of community, the value it brings to people, and the ways to support its growth may lead us to design the next form and the next business model.

We can choose business models that better incentivize the development of platforms that add to our individual and collective well-being (eudaimonia). If someone creates a new site that is like YouTube but everything is consistent with mainstream science, I'm going to switch to it. The choices you make as a consumer change what platforms become. I believe that there is pent-up demand for better-quality internet platforms, and you can do well by doing good. YouTube is just one example – this analysis applies to most internet sites and platforms. The profit motive alone does not magically make the right thing happen. Competition is needed – the best outcome for advancing both free speech and truth is to have lots of sites with competing standards, and let people decide which ones to frequent.

In neoliberal theory, healthy competition should solve all problems. I wonder if that could work, if there really was strong competition. Regardless, it's clear that it doesn't work when actual competition never emerges. Productive competition is not naturally emerging in our current economic system. Our current information space is dominated by a few huge players. We need public initiatives to foster the growth of healthy competition. Where that competition fails, some problems need to be changed with policy – passing laws that regulate what is not working.

New business models need to be *invented*. What do people value, and what are they willing to pay for? Targeted marketing is inextricably bound up with issues of privacy. Do people care about their privacy? Are people willing to pay more for privacy-preserving services? If so, then future entrepreneurs may invent new business models for privacy-conscious consumers. As of August 2020, the privacy-preserving search engine DuckDuckGo commands 0.5 percent of internet searches.¹ It will be interesting to see how their market share evolves over time, and whether more privacy-preserving options emerge for other types of software.

Each business model creates different incentives for the business and its users, and any business model can be leveraged in a more responsible or more exploitative way. The risk for users of some platforms is spending too much time or money there. This can damage the quality of people's lives. Analyzing in-game purchasing systems in video games, King et al. note that "Some in-game purchasing systems may represent financial hazards that contribute to player over-commitment to gaming activities and increase risk of negative financial and psychological consequences" (King et al. 2019, 141). Platforms can decide to encourage as much use as possible, or to encourage reasonable use. My hope is that designers will recognize the spectrum of outcomes, and design systems that encourage balanced expenditures of both time and money.

In an ideal world, internet entrepreneurs would naturally do well by doing good – that is, people who make

¹ <https://gs.statcounter.com/search-engine-market-share>

less-toxic sites that enrich participants' lives will also make more money. Currently, that's often not true. The intriguing question is whether we can invent new business models that align these goals more effortlessly.

Business models seem to drive our design decisions and are driving us in unhealthy directions. We have two options to remedy this. One is to invent new business models that drive us in better directions. The other is to bravely ignore the bottom line and take a more non-profit view – to put our values before our finances. I'm not sure if there really are magic business models that will make the internet a better place – that may be a naive hope. But one thing is certain: *More of the internet in the future should be non-profit*. A non-profit business model and worldview will let platforms put the needs of individuals and communities first.

There have been a variety of attempts at improving the internet through non-profit means. The most notable success is Mozilla, which builds open-source tools that embody their vision “to ensure the Internet is a global public resource, open and accessible to all. An Internet that truly puts people first, where individuals can shape their own experience and are empowered, safe and independent” (Mozilla n.d.). Under this umbrella, they have created the Firefox browser (which is more privacy-preserving than most other browsers), open-source audio tools, virtual-reality toolkits, and a host of other things. Part of why Mozilla has been so successful is because they have a business model which piggybacks off for-profit models. Every time someone does a search in the Firefox browser, the search engine used pays a small fee to Mozilla. They are

funded by advertising indirectly, but in a way that doesn't change their basic values and mission.

Other attempts at non-profit civic spaces have taken a low-budget approach. For example, the free, open-source software (OSS) Mastodon provides an alternative to Twitter and the OSS project Mattermost provides an alternative to Slack. It's tremendously hard for tools like these to achieve wide public adoption, because they can't look or function like commercial sites built by teams of thousands of full-time designers and engineers. Most people have never heard of them, and wouldn't find them usable or appealing if they tried them. Public funding of non-profit social media efforts like these could enhance their value and give them a greater chance to win users and have impact. If we value social spaces that contribute to our civic well-being, then we need to publicly fund them as civic projects (like highways, railroads, and rural telephone and broadband access).

Although I do believe in the potential positive impact of open-source tools, they can still be misused. For example, the hate speech site Gab has adapted ("forked" in OSS terms) the software for Mastodon (Mastodon 2019). Tools are tools – a hammer can be used to build a house or to break windows. We need social and legal consequences for people who misuse them.

Theoretical Summary

The business models that support socio-technical systems shape what those systems become. If we understand the impact of financial forces, then we can work to make

finances *serve our larger goals*, rather than driving a system's design to unhealthy ends.

Practical Implications

Markets shape online behavior in three notable ways. First, people's willingness to pay for access to a site filters who participates. Filters on who participates can reduce bad content and improve content quality, but also can work against equity if some people are financially excluded.

Second, the cost of managing online behavior shapes decisions about what is allowed, and the resources they have (both human and technical) to enforce the standards they envision. Perfect moderation is possible in theory if financial resources are unlimited. With realistic resources, platforms need to make hard choices. To a surprising degree, the cost of managing behavior shapes what online sites are viable.

Third, the way a site is financed changes the site's priorities. Sites that prioritize financial results over all other factors often end up promoting content that does not improve the lives of members or the state of the world. Instead, sites need to articulate values for what sort of world they want to help create.

8 How Can We Help the Internet to Bring Out the Best in Us All?

Since 2004, I've taught the required ethics class "Computing, Society, and Professionalism" to our undergraduates at Georgia Tech. We cover a variety of ethical theories, and then learn about issues of technology and society. We ask students to think about the ethical implications of the technologies we are creating.

My favorite ethical theory is virtue ethics. Virtue ethics traces its roots back to Aristotle, and suggests that the reason for doing good is to be a good person. If you embody the virtues that you value, you can reach toward a state of "eudaimonia." Eudaimonia is hard to translate from Greek, but roughly means "the kind of happiness that is worth having."

Virtue ethics argues that being virtuous is not a binary state – it is something you must continually strive for. Other ethical theories are often used to provide an answer to a dilemma – what is the right thing to do in this situation? Virtue ethics suggests that if you value honesty, cultivating your qualities of honesty is a lifelong pursuit (Stanford Encyclopedia of Philosophy 2016).

I believe we need a virtue ethics for designers and users of the internet. Communications technologies are reshaping our society and our world. As we create those technologies, we must ask: What kind of world do we hope to create? *What are our goals for society*

(our virtues), and how can we help cultivate them with the ways we communicate?

In this conclusion, I'll revisit each of the topics I discussed in previous chapters with this lens: How can we leverage that design feature to help the internet bring out the best in us all?

Community

In Chapter 1, I explored how the internet helps us to form communities. Some forms of community (like church groups or parent-teacher associations) have a long history, and others have been made possible by internet technology. For any group we can ask, what value does it bring to its members? In what ways do people support one another, and how could that be enhanced? We can accomplish that by improving existing groups or imagining new ones.

I don't believe all the possible kinds of community have been invented yet. Over the course of my life, I have found different online groups that have each served as my "third place" for a time. In the 1990s, I spent some time on a Star Trek-themed text-based role-playing game. I pretended to be a Starfleet diplomat, and became friends with a Ferengi ship captain (actually an engineer at Ford Motor Company in Detroit).

In the mid-2000s, I spent time discussing food allergies with other parents on the kids with food allergies bulletin board. They gave me critical safety advice, egg- and dairy-free recipes, and supportive friends who would listen, whatever the challenge or stress I faced. My friends

there understood my challenges on both a practical and emotional level.

Today, I hang out with a group of moderators of a subreddit on our mod team's Slack. Sometimes we talk about content moderation decisions for our subreddit, but we also share political news, discuss the latest movies and television, and share pictures of food we have cooked. The design of Slack lets us have channels for serious conversations about our shared volunteer work, and a myriad of channels on other topics – like one for memes, one for parenting, and one for politics. The theme of the subreddit brought us together, and means we share values and a view of the world. When I travel, the first question I ask myself is “Is there someone from our mod team in that area who I could meet for coffee?”

When I compare these three communities, it strikes me that the quality of interaction has improved over time. I had nothing much in common with my fellow role-players except being fans of Star Trek. Liking the same television show did give us a shared sensibility. I had a lot in common with the allergy parents – we were going through the same stressful phase of life scrutinizing food labels and packing epi-pens everywhere, and my understanding of the art and science of living with food allergies deepened through my interaction with them. I have the most in common with my current friends on my subreddit's Slack. We share values, and I find them smart and interesting. I can rely on them to share links with me that enrich my worldview about all sorts of topics, and have nuanced discussions about what is going on in the world.

A successful online group becomes the people you turn to, like the bereaved grandmother from Chapter 1 who turned to the Mini Cooper brand community when she needed support for devastating news in the middle of the night.

The quality of interaction I have experienced in these groups has improved from the 1990s to now. It's partly of course that I've matured. But so has the technology. There are design features of Slack that support more complex and nuanced interaction than the ASCII connection over Telnet that ran my Star Trek role-playing game. There are also forms of group interaction that we now understand better.

If you are a member of an online community, you have impact in the example you set for others. This is particularly true if you are a "regular" of a group. As we saw in Chapter 1, the regulars set the tone for the behavior of the group. Ask yourself, how can we make this place supportive and help it to better fulfill its potential? Online groups create social worlds. Each of us co-creates those worlds in how kind, understanding, and patient we are with one another, and in the standards we set for ourselves and others.

If you are a designer of an online social platform, ask yourself what kind of world this site is helping to create. Your driving consideration should be thinking hard about how to improve people's lives, individually and collectively. How can the site help the emergence of knowledge (which, as we saw in Chapter 3, is justified, true belief)? How can it be a supportive third place? These questions should be primary. Unfortunately, what actually happens in reality today is that "how to make the most possible money" tends to drive design. As I'll argue below, I believe that to enhance

the value the internet brings, we need to rethink business models that support it. We need more forums on the internet that are non-profit, driven by goals for their members and not by the financial bottom line.

Collaboration

In Chapter 2 I explored the impressive things that people contributing content together can accomplish. As an internet user, I encourage you to find the places that need you. It's tremendously satisfying to see something you created that others find useful. It might be correcting a Wikipedia page, sharing a how-to video, or a cute picture of your cat. Helping create content that enlightens, amuses, or helps others accomplish something is both rewarding for you and a service for them.

For designers of online sites, I challenge you to find new ways to empower people to contribute content constructively. We still have oceans of untapped human potential. If everyone took the least fulfilling and useful half-hour of their day and devoted it to building a shared resource, think what we could accomplish. Different kinds of people need different kinds of opportunities to contribute. Good tools and social support for their use make new kinds of collaborative content creation possible.

Truth and Knowledge

In Chapters 3 and 4, I explored the basic nature of truth and knowledge, and how groups of people on the internet engage

in the social construction of knowledge. In a profound sense, what we all agree is true is what is literally true – at least for now. What we collectively agree is true matters.

At the time I am writing in 2020, we have a crisis of fake information online. This crisis is about to get worse. Artificial intelligence tools like GPT-3 (Brown et al. 2020) can now create compelling fake text, and “deep fake” technology can create videos that are tough to distinguish from real recordings (Kietzmann et al. 2019). These technologies are continually improving, and telling real content from AI-generated content is going to become impossible even for the most savvy human.

One way to address these problems is to fight AI with AI: Create programs that annotate online information with metrics of reliability and accounts of the information’s provenance. We will need mixed-initiative approaches that combine human intelligence with machine. The challenge is that those tools don’t work particularly well yet.

Recently I saw a comically wrong “fact check” on Facebook.¹ The original post showed a picture of actress Diana Rigg (who had just passed away) in one of her first films, and a picture of her in the HBO television series *Game of Thrones*. The poster commented that she hadn’t realized these were the same person. The post was correct – Diana Rigg played Olenna Tyrell in *Game of Thrones*. The fact check noted that this was false because it was not actually a photo of “Delhi CM Arvind Kejriwal” (who looks nothing like Rigg). This is puzzling. Presumably some kind of

¹ Thanks to Sue Dynarski for posting the weird fact check.

algorithmic error is behind the mistake. Services that do automatic fact-checking are far from working correctly. It is possible that making them work well will require changes throughout the software pipeline, starting with embedding data when content is first generated, and noting each modification through the pipeline.

Even if fact-checking services improve dramatically in quality, they will still be vulnerable to deliberate undermining. It's often easier to correct accidental misinformation than deliberate disinformation. There is a growing epidemic of state-sponsored disinformation, much of which is designed to manipulate public opinion. Russian "troll farms" have been working over the last several years to increase divisiveness in the United States, though it's unclear how much impact they have had (Bail et al. 2020; Starbird et al. 2019). We can find ways to detect and block that content, but then their methods will become more sophisticated. We will likely be trapped in this information "arms race" indefinitely.

While it's challenging to counter disinformation from unofficial sources, it's near impossible to counter when it comes from sanctioned, official sources. For example, the United States was unprepared to respond to the challenge of Donald Trump's false claims that he won the 2020 presidential election. Writing this in January 2021, it seems likely that the false information he spread may have a long half-life. Social media played a role in spreading dangerous false information and giving it credibility. This is not the first time a supposedly credible figure has led a significant disinformation campaign, and it is unlikely to be the last. We are increasingly vulnerable to cynical manipulation of our

information landscape, and need to rethink our safeguards. I hope people like readers of this book can help.

As users of the internet, we need to continually increase our skepticism about all information we receive over the coming years. If you have the financial means, invest in for-pay platforms and reliability services that help you to not get misled by false content. I am worried that “truth” is going to increasingly become a privilege of the rich as we drift toward an information space where free information sources are less reliable than those you pay for. One solution is to invest more public funding in supporting high-quality information sources (for example, like the Corporation for Public Broadcasting). Furthermore, information literacy skills need more emphasis throughout our education system and public discourse. Nothing about this is easy. It took all of Chapter 3 of this book to explain that the answer to the question “Should you believe Wikipedia?” is “It depends on the popularity of the page.” We all need more education in both underlying principles and practical strategies for judging the quality of information.

Should users of the internet simply avoid spreading false content, or should they also work to correct it? Currently there’s often no easy way to do so. As we saw in the discussion of the redesign of Yahoo Answers in Chapter 7, empowering users to flag bad content can work surprisingly well. Designers of sites can make it possible for users to help.

For creators of sites where people share information, it is your ethical responsibility to do everything in your power to make it easier for your members to make

reasonable judgments about what to believe. Your goal is not to tell people what to believe, but to give people sufficient metadata to help them to make smart choices about what to believe. This can't be an after-thought in your platform's design – it needs to be a primary focus.

Identity

In Chapter 5 I talked about identity – all the ways we present ourselves online, and how that shapes online interaction. As a user of the internet, it's important to reflect on how you present yourself in different contexts, and how that shapes how people react to you. How you present yourself can shape how the group behaves as a whole. It's also important to be aware of your privacy, and the potential impact of information about yourself that you reveal.

If you are a researcher, I have a grand challenge to propose. I believe there is room for fundamental improvement in the ways we represent online identity. Problems with online identity today include the following:

- It's too hard to tell who is a child. It should be possible to have sites with adult content that are restricted to adults, and sites for children that are just for children.
- It's possible for different people to claim to be the same person.
- It's too hard to block trolls and others who repeatedly break rules. If a site owner blocks someone, the miscreant often can come back with a new account – again and again.

I can imagine a system of “identity servers.” To sign up for an account on a social network, the network might require that you have an account with a particular identity verification service. The service would be run by an independent third party, and would charge a small fee for hosting your identity. They would verify some part of your identity (maybe your legal name, or perhaps just your age), and then delete the data you provided but maintain a secure identity record. Cryptography would help keep your identity secure. Going forward, the service could answer questions like “yes, this person is verified to be an adult” or “yes, this person is the same one who sent that message last week,” but have no other information about who the person might be.

Regarding trolls returning over and over, the system probably couldn’t prevent someone from creating a new identity account. However, the need to create a new account on the identity service creates a bit of design friction. As we saw in Chapter 7, on the Something Awful Forums you need to pay a small fee for a new account if you are banned (Pater et al. 2014). This small barrier dramatically changes people’s behavior. Similarly, the need to create a new identity account and pay a small fee might not discourage banned trolls from coming back a few times, but would discourage them from coming back hundreds of times.

There are major challenges to implementing something like this. The biggest concern is that you would need to trust the identity service, and there would be huge problems if a service was mismanaged or hacked. It’s important to note that being identified can be a great risk for minorities,

members of marginalized groups, and people living under oppressive regimes. It's an intriguing question to think about secure designs where the system can't hand over compromising information even under threat of force, because it doesn't have it.

My proposal here is just a half-baked sketch, but I hope a research team will take on the challenge. The broader point is: We don't think about the basic design of online identity enough. I believe a better system is possible.

Living with and Managing Bad Behavior

Chapters 6 and 7 focused on managing bad behavior. An old cliché says that if you lie down with dogs, you wake up with fleas. My advice for users of the internet at the current moment in history is: *Be mindful about what platforms you use*. Think hard about the impact a particular platform or media source is having on you and on the world, and make deliberate choices when you can.

Suppose a platform is surrounding you with accidental misinformation or deliberate disinformation. Or perhaps the platform is a conduit for hate speech or a vector for harassment. As we saw in the work of Albert Hirschman, your two main options are *voice* and *exit*. You can advocate for change within the platform (voice), or find a different place to get your information and spend your time (exit).

When you exercise your right to exit, you communicate a message to the platform. They may work harder to improve things if enough people leave. If you do leave, you might check back again in months or years to see if they've

improved. Platforms are trying to improve in this area, and they may even be successful.

An important third option on many sites is to found your own subgroup. On Facebook you can easily start a new Facebook group. On Reddit, you can easily start a new subreddit. Then you are in charge, and can try to make the group live up to your standards and aspirations.

If you design or manage an online site, I wish you good luck. These problems are hard. We are going to need big improvements in both AI technology to assist with content moderation, and major shifts in national and international policy to address the festering problems of false and offensive content on the internet. Unfortunately, I don't believe these problems will ever be "solved" to anyone's satisfaction. It's an eternal arms race between defensive and offensive technologies, between good actors and bad.

How to address these issues should be primary in your design process. It won't work if you start considering misuse as an after-thought. My former PhD student Casey Fiesler and her student Natalie Garrett have coined the term "ethical debt." Developers commonly talk about "technical debt." If you leave a technical problem to be dealt with later, the time needed to address it goes up. Ethical concerns are similar. We need to do a better job of anticipating ethical issues raised by our communications technologies (Fiesler and Garrett 2020). Managing bad behavior is a prime example. Waiting to see what bad things happen after a system is live used to be a workable strategy for online sites, but that time is past. Managing bad content and bad behavior need to be considerations from the start of a design process.

For researchers, issues of managing wrong information and abusive behavior online provide a fascinating set of problems to work on. Further, addressing those problems is an opportunity to have a positive impact on the world.

Chapter 7 also highlights ways that the financial model that supports a site ends up driving the site's design. Business models shape what kinds of sites are viable. Right now, those models are driving us toward some dysfunctional outcomes like sites that make money off spreading conspiracy theories and hate speech. Business models to support internet platforms and services are still being invented. Innovation in business models is a potential catalyst for positive change. However, more fundamentally, we need more sites that are non-profit and whose design is driven by trying to enhance quality of life for individuals and societies.

The Need for an Educated Citizenry

In April 2018, Facebook founder and CEO Mark Zuckerberg was called to testify before the US Congress to respond to allegations of misuse of user data by the site and its partner Cambridge Analytica. Reporter Emily Stewart wrote after the hearings that “Senators seem to agree they want to fix something about Facebook. They have no idea what” (Stewart 2018). During the hearings, several Members of Congress displayed a basic lack of understanding of what Facebook is and how it works. Senator Lindsey Graham asked Zuckerberg, “Is Twitter the same as what you do?” Senator Orrin Hatch asked, “How do you sustain a business

model in which users don't pay for your service?" (Zuckerberg politely told him that they sell ads) (Zetlin 2018). Our policy-makers can't guide the future of the internet if they don't understand it. Having national leaders who don't understand the basics of the internet is a poignant illustration. More broadly, this lack of knowledge is a problem at all levels of society. Better outcomes depend not just on policy-makers and high-tech developers, but on all of us as informed citizens and smart consumers.

The future of the internet will be shaped by people's basic internet and information literacy. Researcher danah boyd points out that "media literacy" education is already taught in schools, but in a form that is not really helping much (boyd 2018). Curricula about the nature of information need to be much more extensive, and integrated throughout schooling – not something you do for one week in fourth grade. We also need to educate ourselves, and to expect our elected representatives to be information-literate.

Throughout this book, I've tried to provide accessible summaries of theoretical readings. The goal is to give you a basic understanding and to encourage you to read the originals. Understanding the internet is a new field that is evolving. We all need a more nuanced understanding, and theory can help. This is not just for high-tech designers, but for everyone – there are few professions untouched by this technology. What do you wish members of the US Congress had known before questioning Zuckerberg? We all need to learn those ideas, and to make sure they are widely taught.

Aspiration and Design

I look back at the *World Book Encyclopedia* that is still in my childhood bedroom, that my mother saved to buy, and am astonished – how far we have come! It's hard for me to explain to my children how we used to do things, back when you couldn't just do an online search and get the answer to almost anything.

At the same time, we as a society can do better at a host of things – like taking better care of the environment, being pro-active about public health, treating everyone in our society fairly, fighting racism, and lessening economic inequality. As the internet reshapes every aspect of our society, we must ask the question: What kind of world do we want to live in? Our communications technologies shape that world. How can technologists help?

In 2018, the Association for Computing Machinery (ACM) rewrote its code of ethics for the first time in twenty-five years. I participated in one three-day meeting where we rewrote parts of the code, and it was the greatest privilege of my career. The code has a series of ethical imperatives. Thinking about the bigger picture, this one stands out:

3.7 Recognize and take special care of systems that become integrated into the infrastructure of society.

Even the simplest computer systems have the potential to impact all aspects of society when integrated with everyday activities such as commerce, travel, government, healthcare, and education. When organizations and groups develop systems that become

an important part of the infrastructure of society, their leaders have an added responsibility to be good stewards of these systems. Part of that stewardship requires establishing policies for fair system access, including for those who may have been excluded. That stewardship also requires that computing professionals monitor the level of integration of their systems into the infrastructure of society. As the level of adoption changes, the ethical responsibilities of the organization or group are likely to change as well. Continual monitoring of how society is using a system will allow the organization or group to remain consistent with their ethical obligations outlined in the Code. When appropriate standards of care do not exist, computing professionals have a duty to ensure they are developed. (ACM 2018)

Much of the internet has become integrated into the infrastructure of society in ways that give us new ethical obligations. Although earlier in this chapter I suggested you might choose not to use platforms that bring you false information or harassment, in some cases that's simply not possible. You might be required to use a platform for your job. Or an organization might have to use a platform for outreach because that's where the people are. For example, in her dissertation research, my former PhD student Sucheta Ghoshal found that many grassroots groups would prefer not to use Facebook because it excludes economically less-advantaged members who don't have a smartphone or computer. However, so many people are on Facebook that they end up doing outreach on the platform anyway (Ghoshal and Bruckman 2019). Platforms that

people can't choose not to use have added ethical responsibilities to society as a whole.

We need to identify our values before we start creating new pieces of technology or modifying old ones. In their conceptualization of "value-sensitive design," Friedman et al. propose that designers do the following:

- "Start with a value, technology, or context of use."
- "Identify direct and indirect stakeholders."
- "Identify benefits and harms of each stakeholder group."
- "Map benefits and harms onto corresponding values."
- "Conduct a conceptual investigation of key values."
- "Identify potential value conflicts."
- "Integrate value considerations into one's organizational structure." (Friedman et al. 2006)

That's a high bar, but it's worth working toward. In truth, all design is value-centered design. Technology is never neutral. The only question is whether we are paying attention to what our implicit values are, and deliberately trying to have a positive impact on the world or not.

Design features of online communities shape human behavior. We can leverage those features to encourage more thoughtful discussions, greater mutual understanding, and the growth of knowledge.

If you are a designer of information and communications technologies, throughout this book I've tried to give you some tools to help you reflect on your design choices. The choices you make shape what sort of human behavior emerges as a result. If you are a participant in online communication, think hard about what platforms you choose to

use, and use your voice to ask that platforms provide a better experience for everyone. Our communications technologies shape who we are as individuals, communities, and societies. Understanding them better can empower us to work toward better outcomes.